

# SIF Discovery Round 2 Close Down Report Document

## Date of Submission

Jul 2025

## Project Reference Number

10061339

## Project Progress

### Project Title

Heatropolis

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10061339

### Lead Funding Licensee

UKPN - London Power Networks Plc

### Project Start Date

April 2023

### Project Duration

3 Months

### Nominated Project Contact(s)

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## Project Summary

Heatropolis addresses Challenge 4: Accelerating decarbonisation of major energy demands; developing a new evidence-based framework for delivering net-zero district heating that will support a smarter, more flexible, and integrated energy system.

Decarbonising large-scale district heating systems will have profound implications for investment planning in the electricity networks. The challenge of distributing power to low-carbon heat networks is growing and BEIS estimates that by 2050 they will serve over 18% of the heat demand for buildings.

The Heatropolis project is at the forefront of energy network innovation as it requires the collaboration and coordination of a complex array of stakeholders to deliver a whole system approach and thinking with flexibility as the core theme. The project will deliver a highly scalable demonstration of accelerated decarbonisation for existing heat networks, as the methodology will have transferable properties for new infrastructure developments.

The project will deliver:

- A replicable solution -- a data-led framework for improving operational planning in power network investment and heat network infrastructure
- An integrated approach -- reduced risk for a cost-effective transition, in partnership with institutional investors, heat network operators and DNOs
- Flexibility services -- validated demand response mechanisms that can function within an agreed-profiled connection to manage capacity constraints, support increased use of variable renewable technologies, and reduce costs that are passed on to customers.

Project success will be achieved through involvement and support from the following partners:

- Distribution Network Operator -- UK Power Networks is the UK's largest electricity distributor delivering power to 8.4 million homes and businesses
- Heat Network Operator -- Metropolitan manages over 75 ESCO's contracts for district heating networks, and is responsible for provisioning the design-engineering sub-contractor for the heat-load modeling and data validation
- Smart controls -- Passiv UK are market-leader in delivering net-zero innovation projects with deep domain expertise in monitoring,

controlling and optimising low-carbon technologies

- Local Authority -- Camden London Borough Council, a progressive local authority with ambitious net zero targets by 2030 and a track record in district heat innovation, in which the energy centre for the Kings Cross heat network is located

Our hypothesis is that we can help heat network operators transition to net zero. The commercial, reputational, environmental, safety and delivery needs of heat network operators and all other impacted stakeholders will be investigated through the discovery phase and inform the rest of the project.

## Project Description

Conventional approaches to transitioning to heat networks from fossil fuels are made in isolation from the strategic investment and operational planning on electricity networks.

To avoid unnecessary upstream reinforcement and seasonal capacity constraints on the electricity network, the heat networks' decarbonisation plans will need to be integrated within the operations of the emerging smarter and more flexible whole energy system. This will require a new evidenced-based based framework for coordinating multiple stakeholders including network operators -- planning and managing local power systems, heat network operators - controlling on-site assets and investors -- owning live assets on heat networks.

Heatropolis will establish a new framework for accelerating the decarbonisation of major energy demands that takes a whole system perspective to evaluate the costs, benefits and efficiencies that can be achieved through a collaborative approach between the heat network developer and distribution network operator (DNO) to coordinate investment decisions from the multiple stakeholders.

The Heatropolis project will optimise the decarbonisation of existing heat networks by integrating the use of smart technologies and flexibility into a data-driven framework for reducing costs overcoming network challenges and delivering greater value from whole system coordination. Heatropolis aims to develop and apply this framework to the high-profile heat network at the Kings Cross Development to showcase an improved pathway for the decarbonisation of other heat networks.

The flagship Kings Cross site has committed to reaching net zero by 2030 using on-site solutions, with the aim to remove all dependencies on off-site carbon offsetting schemes.

Kings Cross' ambitious onsite decarbonisation plans aim to replace all fossil-fuelled systems with low-carbon electric heat pumps. These plans present complex technical and commercial challenges for the site that will also ultimately have considerable implications for the local power network infrastructure and operation, raising an existing connection from 1.5 MW to 17 MW.

In discovery, Heatropolis will:

- Investigate the amount of flexibility that low-carbon heat network assets could provide to the electricity network through load shaping and demand reduction
- Evaluate the commercial opportunities to reduce the load on the network through the better use of data for smart control optimisation, and profiled connections planning
- Define a methodology for organisations to plan and agree a tailored profiled connection offering suitable for heat networks with the DNO that maximise the use of existing capacity, minimises the need for network reinforcement and reduces connection upgrade costs for consumers

## Summary Key Findings

See End of phase report

## User needs

See End of phase report

## Impacts and benefits

See End of phase report

## Risks, Issues and Constraints

See End of phase report

## Working in the open

See End of phase report

**Costs and value for money**

See End of phase report

**Special conditions**

See End of phase report

**Documents uploaded where applicable**

Yes

**Documents:**

SIF Round 2 Discovery - Heatropolis End of Phase (for upload) (1).pdf